

PARKING GARAGE DESIGN CRITERIA

MONTGOMERY COUNTY GOVERNMENT
Department of Public Works and Transportation
Division of Traffic and Parking Services

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FOREWORD

Montgomery County, through its Department of Public Works and Transportation, Division of Traffic and Parking Services, owns and/or operates numerous public parking garages. These garages were designed and constructed under the direction of the County. Over the years, the County has gained considerable experience with parking garage design from facility operation and maintenance. The purpose of this design criteria is to summarize what we feel are the prerequisites for a garage design that will best meet our present and future needs.

This document, when adjusted to each site specific parking garage, will form the primary means to convey our requirements to the consulting firms who will design the facility. Deviations from the criteria will be considered with adequate justification. The criteria will be revised periodically to keep pace with advances in the state-of-the-art and our own experience.

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Section 2 - Architectural**2.1 General**

1. The garage shall have an exterior architectural treatment that aesthetically blends with adjoining properties and is appropriate for the site. Parked vehicles shall be shielded from view as much as possible.
2. The garage shall be recognizable as a parking garage, either through design or signing.
3. The requirements of the Americans with Disabilities Act (ADA) shall be incorporated.
4. The garage shall park the specified number of cars and be designed for future expansion up to the maximum parking capacity permitted on the site by zoning regulations.
5. The design is to be highly efficient. Building corners and other space which cannot be used for parking shall be used for required stairwells, elevators, parking offices, storage space, etc. to the extent possible.
6. The design and material selection shall consider the need for ease of maintenance, economy, and long life.
7. The parking structure shall be designed in such a manner that there will be no discharge of storm waters off the exterior and interior edges of the elevated floors. The entire perimeter of each floor shall be sloped toward the interior to provide positive drainage. Water shall drain away from elevators and stairwells. Provide positive drainage on all levels (minimum 2% slope in all directions).
8. Heavy duty, UL fire rated metal doors with metal door frames shall be used throughout the building. Use of rust resistant material shall be considered.
 - a. Hardware shall be of a heavy duty type. High strength continuous hinges shall be used for stair tower doors.
 - b. Doors to office space, restrooms, storage rooms, and equipment rooms, accessible to the public, shall be lockable, using Medeco high security type lock cylinders, master-keyed to the Division of Traffic and Parking Services lock system. Keying shall be coordinated with the Division of Traffic and Parking Services.
 - c. Doors in stairwells shall have rectangular vision panels positioned to provide the best possible view of hiding areas within the stairwell.
 - d. Power-operated door equipment for handicapped use shall be used where directed by the County.
9. Hand and guard rails shall be constructed of aluminum or galvanized steel with a suitable architectural finish. Galvanized steel hand and guard rails shall be painted in accordance with Section 9 of the Design Criteria.

10. Suitable provisions for washing the exterior of window walls and other glass shall be included in the design. Provide adequate space between the elevator cab and the window wall for cleaning of the glass, including glass wall on the cab.
11. Two illuminated flagpoles with a lockable internal halyard shall be installed.
12. The contractor shall be required to provide a small supply of bricks, floor tile, ceiling tile, and other material which may be difficult to match, if needed for repairs in the future.
13. Where raised areas are required at elevators and stairs, the platforms and sloping elements created shall be protected by the installation of hand rails. Platforms in front of elevators shall be a minimum of 10-feet from the elevator doors.
14. Stairwells shall incorporate the provisions of ADA for rescue assistance.
15. Protection of the structure from the activities of birds shall be incorporated as part of the design of the structure and architectural treatments. Passive means of excluding birds from perching and roosting is the preferred long-term solution. Other methods to discourage birds, such as screening, spiked strips and Adaddy long legs@ devices, may also be utilized.

2.2 Garage Layout

1. All parking spaces shall be accessible for self-parking, i.e. no spaces shall be "buried" or situated in such a manner to make it necessary to move another vehicle to utilize a parking space.
2. The design is to permit the alternative use of meter and operator-attended parking as described in Section 7, Parking Control System.
3. The preferred minimum vertical clearance for vehicles shall be 7'6" to the underside of any obstruction, with an absolute minimum of 7'2", except a minimum of 8'2" shall be provided for routes to van accessible spaces. See item 14. A clearance bar shall be suspended at each vehicle entrance at a height such that its clearance height is equal to the minimum clearance anywhere in the garage. Signage shall indicate the minimum clearance.
4. Pedestrian access to the garage shall be provided at points along its perimeter which are convenient to pedestrian circulation. Pedestrian and vehicle conflicts at ingress/egress points shall be minimized.
5. Garage entrances shall preferably provide adequate reservoir space (five or six vehicles per lane), either inside or outside the structure, so entering vehicles do not block the movement of other traffic.
6. A layout that allows vehicles to travel in a straight line path after passing the entrance control point is preferable to a layout that forces vehicles to turn immediately upon entering the garage.
7. The number of points of access shall be determined within the context of the functional design of the garage and the surrounding streets.

8. The distance between exit control points and the intersection of the driveway and street shall be determined within the context of the functional design of the garage.
9. A straight path approach for cars approaching the exit control point from within the garage with allowance for queuing without interfering with parking or unparking operation is desirable.
10. The exit area shall have no visual obstructions and vision should be unimpeded as the driver exits.
11. The facility shall be designed so that the driver encounters a minimum number of restraints from the time of entry into the facility to the point of departure. Restraints at the point of entry may consist of inadequate access point definition, insufficient access lanes, conflicts with pedestrian traffic and low lighting levels. Within the structure, an inadequate or excessive number of vertical circulation travel circuits and search patterns, steep ramps, tight turns, sub-standard park/unpark geometrics, low lighting levels, excessive decision points and improper signing constitute restraints.
12. Design preference is for 90° parking stalls, 9' x 18' and a 24' minimum drive isle and end aisle width, except for garages serving retail where the space width shall be 10.0'. Bay widths shall be 62 foot face of column to face of column. End aisles must be designed to provide an adequate turning aisle radii, per item 21 below. Only "front in" parking will be permitted. Lines between stalls should fall on column lines. Generally "small car" spaces are undesirable, except when located in odd spaces which cannot be designed for standard size stalls. Small car spaces cannot exceed 10% of garage capacity. Coordinate the location of standpipe systems with mechanical requirements to provide a 44-inch firemans access space between parking stalls. Access areas shall be delineated by diagonal striping the accessway. Parking stall striping shall be in accordance with Figure 1.
13. Continuous ramps with parking are preferred. Maximum slopes shall be 5 percent for parking ramps, with 3 to 4 percent preferred. Ramps without parking shall not exceed 10 percent.
14. Stalls for handicapped accessible parking shall be grouped together and be located convenient to exit points, preferable at street grade level and not on parking ramps which exceed a 2% slope. However the need to group the accessible parking in more than one location to meet ADA requirements must also be considered. The number and size of handicapped accessible parking spaces shall be as required by code. A 5' aisle is to be provided on both sides of each handicapped accessible parking space. One of every eight required handicapped accessible parking spaces shall be van accessible. An 8' aisle on at least one side of each van accessible space is required. The handicapped should not be required to walk behind parked cars. If this is unavoidable, a path shall be clearly marked with hash marks. All crosswalks shall be similarly marked. Each handicapped accessible parking space shall be marked with a MUTCD sign R7-8 and a sign "for tag or permit parking only." Van space shall be signed as van accessible. All van accessible spaces, and the route to these spaces, shall be provided with a minimum vertical clearance of 8'-2".
15. Provision shall be made for motorcycle and bicycle parking as required by code, with special reference to utilizing dead space and odd corners which would otherwise be unused. Cycle-Safe inverted "U" bicycle racks, or approved equal, shall be provided.
16. The perimeter of the parking area shall be lined with parking stalls to the maximum extent possible.
17. Curved, triangular and other irregularly shaped parking areas/structures shall be avoided. Rectangular shaped facilities are desirable.
18. Traffic aisles shall be double-loaded serving parking stalls on both sides wherever possible.

19. Traffic aisles shall be aligned parallel to the long dimension of the parking areas wherever feasible.
20. Raised islands shall not be provided at the end of parking bays.
21. Turning radii on all ramps shall be adequate for safe circulation.

2.3 Support Facilities

1. Support facilities consist of a management/cashiering office, office space for future security monitoring, employee facilities, restrooms for employees' use, and storage rooms. Public restrooms shall not be provided.
2. The type of support facilities required for any given garage will vary with the type of operation of the parking facility. When certain types of support facilities are not initially required, the design shall consider the addition of certain support facilities in the future.
3. Support facilities shall be provided with thermostatically controlled heating, ventilating and air conditioning systems, except storage rooms for large quantities of bulk supplies, barricades, large items of equipment, etc. shall only be provided with heat and ventilation.
4. Provided a traffic bearing membrane system on slabs over support facilities.
5. Restrooms, if provided, shall comply with facilities for the handicapped, as required by ANSI A117.1 Sect. 4.1-4.2.
6. Office space shall be provided with telephone service.
7. For cashiered managed operations, the office provided shall contain an 18"x 18"x 26" (minimum interior dimensions) C rated safe, securely fastened to the structure.

2.4 Safety and Security

1. Passive security techniques shall be considered.
2. The facility shall be designed for the future addition of an active security. Sleeves shall be placed in slabs and beams for future security conduits. Any concealed future security conduits shall be installed. DTPS will provide direction on a case-by-case basis.
3. Management/cashiering offices and cashiering booths shall be equipped with a security/alarm system.
4. Openings between garage levels in stairwells, elevator waiting areas, parking areas, etc. shall be designed or protected to reduce the likelihood of accidental falls.
5. Exterior walls, including roof parapets, shall be designed to reduce the likelihood of accidental falls.
6. A non-slip coating system shall be provided on concrete floors in all major pedestrian areas

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within the facility (elevator lobbies, stairwell landings and treads, etc.). Color shall be selected by the Consultant with approval by the County.

7. The garage structure shall be sited so as to permit fire fighting equipment access.
8. The ground level floor shall be designed to limit access to designated points in the garage periphery.
9. All paths of pedestrian and vehicle circulation shall be well lighted.
10. Where feasible, stairwells shall be visible from the exterior and/or glass enclosed. Glass is to be replaceable from the inside of the stairwell.
11. Exit stairs that continue beyond the floor of discharge shall be interrupted at the floor of discharge by gates, doors, or other effective means, except exit stairs that continue one-half story beyond the level of exit discharge need not be interrupted by physical barriers where the exit discharge is clearly obvious.
12. Hiding places, especially within stairwells, shall be eliminated. Use sloped sections for stair closures at lowest level and full height screening with lockable gates of tops for stairs where the stair extends up to a non-public service room above.
13. P-O-F machines or Master meter stations shall be visible to the public using the facility. Master meters and Queues of people using P-O-F machines shall be protected from traffic.
14. Where feasible, glass-backed elevator shafts and cars shall be utilized to provide visibility. Glass is to be replaceable from the exterior of the elevator shaft. Where glass backed elevators cannot be used, glass front elevator doors shall be considered.
15. Elevators shall be located where the door and open car are visible to the public using the facility.